the same size as those used in Experiments 10 and 12, was injected under the skin of the back with 4 minims of fresh serum of one of the specimens of *Tropidonotus* used in those experiments. No effects whatever were produced, though the animal was closely watched for a time and kept under observation until the next day.

Experiments 12 and 13 were subsequently confirmed.

Remarks on Experiments 8, 10, *and* 11.

The parotid extract of the Aglyphous snakes used was a viscid mucus, quite different from the thin opalescent fluid obtained from the Opisthoglyphous snakes. Its chemical nature would also seem to be different, the effects being much less like those produced by minimum doses of Cobra venom.

The violent general convulsions that followed the administration of *Zamenis* extract seem to point to some direct effect upon the nervous system, and are in marked contrast with the dyspnœic convulsions that characterise poisoning by the Opisthoglyphous snakes used in the first series of experiments.

"The Influence of High Pressures of Oxygen on the Circulation of the Blood." By LEONARD HILL, M.B., F.R.S., and J. J. R. MACLEOD, M.B., Mackinnon Research Scholar of the Royal Society. Received May 22,—Read June 12, 1902.

In a former communication* one of us recorded the effect of a pressure of two to three atmospheres on the circulation.

We have since carried on the observations at much higher pressures and by a different method.

A tubular steel pressure chamber was constructed. The ends of the tube were closed by thick glass discs.

A curarised frog was placed inside, and the web of one foot stretched on a wire ring just behind one of the glass discs. The pressure chamber was placed in front of an arc light, and the web illuminated so that the capillary circulation could be observed through a microscope (1-inch objective). The pressure was rapidly raised to 70 atmospheres by connecting the chamber with an oxygen cylinder.

The capillary circulation continued. No alteration could be detected during the rise of pressure. After 15–20 minutes the oxygen tap was closed and the pressure chamber rapidly decompressed. For the first half-minute there occurred no change in the circulation. Then

* 'Roy. Soc. Proc.,' 1900.

there suddenly swept down the arteries gas bubbles, which drove the blood corpuscles before them and filled the capillaries.

On recompressing the frog to 70 atmospheres the gas within the vessels passed again into solution and the corpuscles appeared in the capillaries.

We have made similar observations on a bat (obtained for us by the kindness of Mr. F. Jones).

We observed the circulation in the wing. The bat was hibernating. The circulation was therefore slow, and the heart-beat infrequent. On raising the pressure to 10 atmospheres the pulse became more frequent and the capillary circulation accelerated. At 20 atmospheres of oxygen the circulation continued unimpaired. On decompression after 10 minutes the circulation became impaired, but no gas bubbles appeared in the capillaries. The animal had not, owing to the slow circulation, been under pressure for a sufficient length of time to become saturated with gas.

One of us (L. Hill) has frequently noticed gas embolism to follow decompression of mice and birds. The gas embolism is the cause of the convulsions which follow decompression.

Conclusion.—A rapid increase of pressure to 70 atmospheres has no mechanical effect on the circulation of the blood.

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"The Influence of an Atmosphere of Oxygen on the Respiratory Exchange." By LEONARD HILL, M.B., F.R.S., and JOHN J. R. MACLEOD, M.B., Mackinnon Research Scholar of the Royal Society. Received May 22,—Read June 12, 1902.

Regnault and Reiset* found that the uptake of oxygen was the same in 46 per cent. and in 77 per cent oxygen as in atmospheric air.

Paul Bert† on the other hand found that the processes of oxidation were most intense in 60 per cent. oxygen, while they became lessened in a pure atmosphere of oxygen. Bert's figures for a rat placed for 24 hours in a current of air and oxygen were as follows:—

Amount of O_2 in atmosphere.	O_2 inspired.	CO_2 expired.
21·0 per cent.	12·6	7·06
48·3 ,, ...	13·72	10·32
88·2 ,, ...	11·35	6·96

* Regnault and Reiset, 'Annales de Chimie,' 20, 26 (1849). Translated in Annalen der Chemie u. Pharm.,' vol. 73, p. 92.

† Paul Bert, "La Pression Barométrique," p. 832 (Paris, 1872).